SEMINAR SERIES PRESENTATION (DOUBLE FEATURE)

TUESDAY July 24 – NSSTC 1010 – 11:00a

SPEAKER: **Brett M Williams, NWS Hollings Scholar**
Dept of Atmospheric Sciences
University of Missouri - Columbia

TOPIC: OVERVIEW OF SUMMER CONVECTION ACROSS CENTRAL ALABAMA

Over the last four years forecasters at the NWS Weather Forecast Office in Birmingham, Alabama have been producing daily morning analyses of mesoscale boundaries using detailed, real-time analyses of surface observations, NEXRAD data, Geostationary Operational Environmental Satellite imagery, and Land Information System data generated at the NASA Short-Term Prediction Research and Transition Center. Such boundaries include old thunderstorm outflow boundaries, horizontal convective rolls, differential heating boundaries, shallow prefrontal troughs, and deep synoptic fronts. The results of these analyses demonstrate that convection is either directly initiated or organized through these features; thereby dispelling the myth of random, pop-up summertime thunderstorm activity. The project culminated in this fourth year, where areas favorable for convective initiation are identified and applied to the operational probability of precipitation forecast. This presentation will describe the daily procedure used to identify boundaries, including the short-term forecast polygons, and the results of the enhanced forecasts.

SPEAKER: **Chris Rohrbach, NWS Hollings Scholar**
Dept of Meteorology
NC State University

TOPIC: PRELIMINARY EXAMINATION OF QLCS TORNADOES ACROSS CENTRAL ALABAMA

Quasi-linear Convective Systems (QLCS) produce a wide variety of severe weather including damaging straight-line wind, large hail, and weak EF0 to strong EF3 tornadoes. Previous studies have shown that 18% of the tornadoes across the U. S. from 1998-2000 were associated with QLCSs. Similar research often highlights a maximum in QLCS tornado touchdowns from Alabama and Mississippi northward into the Ohio River Valley. An ongoing study being conducted at the National Weather Service in Birmingham, Alabama focuses on environmental conditions that lead to QLCS tornadoes. Preliminary results of this study are revealing in that 39% of all nontropical tornadoes across central Alabama from 2007-2012 are attributed to QLCSs. However, tornado formation within QLCSs is often harder to anticipate and not well understood as with their supercell counterparts. Therefore, it is imperative that forecasters recognize and better assess both the environmental conditions as well as radar characteristics associated with QLCS tornadoes. Forecasting QLCS events is often difficult in the longer term and even in a nowcast environment. Forecasters often struggle maintaining the delicate balance between over-warning and having a high false alarm rate or the risk of under-warning and having tornadoes that go unwarned. This presentation will explain the methodology in developing the tornado warning statistics and examine several key environmental cues that may improve QLCS tornado forecasting.